SIEMENS

LITHOSTAR Multiline

SP

Maintenance Protocol

System

LITHOSTAR Multiline

Customer:	
Address:	
Department:	
Room:	
Contact person:	
Telephone:	
Cust. specific no.:	
Cust. no.:	
Date.:	

The instructions RXL2-120.101.01.06.02 are required for this protocol

© Siemens AG 1995
The reproduction, transmission or use of this document or its contents is not permitted without express written authority. Offenders will be liable for damages. All rights, including rights created by patent grant or registration of a utility model or design, are reserved.

Print No.: RXL2-120.105.01.06.02
Replaces: RXL2-120.105.01.05.02

English
Doc. Gen. Date: 08.05

SIEMENS Office:	
Address:	
Region:	
Country:	
Contact person:	
Tel.:	
CSE in charge:	
Tel.:	

Remarks Regarding the Protocol:

The protocol is valid as proof of quality for **one** check that must be performed on the system / component in one year.

The check must be performed in the specified intervals.

The results of the check are entered in this protocol.

The chapter numbers in front of the checkpoints indicate the corresponding chapters in the particular instructions (see cover page).

The protocol must be completely filled out by the Customer Service Engineer, i.e.:

- All boxes must be filled out. If a box does not apply to the system or if no entry needs to be made, check the “n.a.“ box.
- Enter the customer number (Cust. No.:) and the date of the check in the header of each page so that each page can be allocated to a customer and to a check date.
- If there are complaints, the IVKs for the component about which a complaint has been made as well as the type of complaint must be entered in the “Open Points“ table provided for this. Correction of these open points also must be documented in this table with the date and a signature. If there are no open points, check “No“ and document this with the date and a signature.
- If movable components (also test phantoms that are part of the system) that can be used in different systems are used for the check, they must be entered in the “Movable Components“ table provided for this.
- The measurement values for the measurements that must be performed during the check must also be entered in the open spaces / tables provided for them.
- After completing the check, Page 3 of this protocol must be filled out and signed.

Further Processing and Archiving of the Protocol

The protocol is a document and thus must be archived. After completing the test, it must be filed in the corresponding register in the “System Owner Manual“ binder. If needed, a copy can be handed to the customer.

System:	
Serial No.:	
Software Version:	
Number of the Service Contract:	
Type of Maintenance:	

Evaluating the Condition of the System / Component

The system has no deficiencies. The image quality test resulted in no differences from required reference values.	☐
The system / component has slight deficiencies that have no affect on continued operation of the system. However they should be corrected preventively. The image quality test resulted in no differences from required reference values.	☐
The system / component has serious deficiencies. For safety reasons, continued operation of the system is permitted only after successfully correcting the deficiencies.	☐

After completing all work steps, an evaluation was performed.

Signature: _____

Date: Name:

The operator or a person assigned for this has taken note of this evaluation.

(if national regulations require this)

Signature: _____

Date: Name:

Explanation of Abbreviations in the Protocol

Abbrev.	Explanation		Abbrev.	Explanation
SI	Safety Inspection		PMF	Preventive Maintenance, Operating Value Check, Function Check
SIE	Electrical Safety Inspection		Q	System Quality, Image Quality
SIM	Mechanical Safety Inspection		QIQ	Image Quality
PM	Preventive Maintenance		QSQ	System Quality Check
PMP	Periodic Preventive Maintenance		SW	Software Maintenance
PMA	Preventive Maintenance Adjustments		CSE	Customer Service Engineer

Additional activities performed

Only activities that are not described in the instructions for the system / component need to be listed.

	Date:		
Additional activities performed:	OK	not OK	n.a.
	☐	☐	☐
	☐	☐	☐

Open Points:

Yes: ☐ No: ☐ Signature: _____

Date: Name:

If “Yes“, enter the component with the IVK and the open point (only the number) in the table. After completing maintenance, record this in the table.

IVK	Component	Open Points	Completed	
			Date	Signature

Measuring Devices queried electronically:

Yes: ☐ No: ☐ Signature: _____

Date: Name:

If the measurement devices are queried electronically, for example with a Scout Mobile Device, entry of the measuring devices in the table can be skipped.

Measuring Devices	Type	Serial No.	Date Used	Next Calibration Due

Movable Components:

Yes: ☐ No: ☐ Signature: _____

Date: Name:

If “Yes“, enter the movable component with which the check was performed along with the with the Serial No. in the table.

Movable components (also test phantoms that are part of the system) are parts that can be used on different systems).

Component	Serial No.

OK not OK | n.a.

1 General information

2 Inspection of exterior and inspection of surroundings

2.1 Inspection of exterior

PMP	Unit	☐	☐	☐
PMP	Cover	☐	☐	☐
PMP	Table pad	☐	☐	☐
PMP	Shock wave head/coupling bellows	☐	☐	☐
PMP	Image intensifier	☐	☐	☐
PMP	X-ray tube assembly cover	☐	☐	☐
PMP	Control PC	☐	☐	☐
PMP	Keyboard	☐	☐	☐
PMP	Mouse	☐	☐	☐

2.2 Inspection of surroundings

2.2.1 Unit movements

PMP	Patient monitor	☐	☐	☐
PMP	Monitor trolley	☐	☐	☐
PMP	Additional medical devices	☐	☐	☐

3 Safety inspections

SI	Remove the unit covers	☐	☐	☐

3.1 Electrical Safety

SI	Emergency-off switch function	☐	☐	☐
SI	Function of the fault current circuit breaker	☐	☐	☐
SI	Safety circuit switch function	☐	☐	☐
SI	Lines and cables	☐	☐	☐
SI	HV cable shielding	☐	☐	☐

Measured value:

SI	Time - radiation indicator	☐	☐	☐
SI	Function switch of the generator	☐	☐	☐
SI	Protective conductor check	☐	☐	☐

Measured value:

3.2 Mechanical Safety

SI	Toothed belt of the W-drive	☐	☐	☐
SI	Toothed belt of the O-drive	☐	☐	☐
SI	X-ray tube assembly	☐	☐	☐
SI	Collimator	☐	☐	☐

		OK	not OK	n.a.
SI	Image intensifier with camera head	☐	☐	☐
SI	Unit mounting	☐	☐	☐
SI	Safety distance of the unit	☐	☐	☐
SI	Urology insert	☐	☐	☐
SI	Shock wave heads	☐	☐	☐
SI	Unit grip strip	☐	☐	☐
SI	Table extensions	☐	☐	☐
SI	US applicator	☐	☐	☐

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

SI	Cassette holder mounting	☐	☐	☐
SI	Exposure display on the control monitor	☐	☐	☐
SI	Collision protection	☐	☐	☐

4 Inspection for wear and replacement of parts

4.1 Periodic preventive replacement of parts

PMP	Battery	☐	☐	☐

4.2 Inspection for wear

4.2.1 Unit/mechanical components

PMP	O-W-X-Y-Z drives	☐	☐	☐
PMP	O-drive toothed belt	☐	☐	☐
PMP	W-drive toothed belt	☐	☐	☐
PMP	X-drive toothed belt	☐	☐	☐
PMP	Y-drive toothed belt	☐	☐	☐
PMP	CL-drive toothed belt	☐	☐	☐
PMP	Z-drive plastic clutch	☐	☐	☐
PMP	Actual value potentiometer	☐	☐	☐
PMP	Pressure tester	☐	☐	☐
PMP	PTU adapter-M	☐	☐	☐
PMP	Shock wave head	☐	☐	☐

4.3 Respiratory belt

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

		OK	not OK	n.a.
PMF	Wear and tear	☐	☐	☐
PMP	Contacts at the PS contactor (generator)	☐	☐	☐

5 Maintenance

5.1 Changing the water in the coupling circuit

PMA	Shock wave head	☐	☐	☐

5.2 Changing the water in the cooling circuit,

5.2.1 Cleaning the quick vent valve

PMA	Water preparation	☐	☐	☐
PMA	Water system: Cleaning the system parts	☐	☐	☐
PMA	Cooling circuit: Water replacement	☐	☐	☐
PMA	Cooling circuit: Flow/bubble-free	☐	☐	☐
PMA	Water tank: Check the level	☐	☐	☐

5.3 Lubricating and oiling the linear guides of the drives

PMA	Linear guide, longitudinal (lubricate)	☐	☐	☐
PMA	Linear guide, transverse (lubricate)	☐	☐	☐
PMA	Guide rail, W-drive (oil)	☐	☐	☐
PMA	Guide rails, orbital (oil)	☐	☐	☐
PMA	Guide rails, orbital (oil)	☐	☐	☐
PMA	Gear wheel, O-drive (lubricate)	☐	☐	☐

6 System heat dissipation

6.1 Cooling unit in the service cabinet

PMP	Switching area	☐	☐	☐
PMP	Seals/leaks	☐	☐	☐

6.2 Cabinet ventilation

PMP	Intake air and ventilation shafts unobstructed	☐	☐	☐

6.3 MEMOSKOP

PMP	Cleaning the ventilation slots	☐	☐	☐

6.4 X-ray tube assembly fan

PMP	Function	☐	☐	☐
PMP	Cleaning the ventilation slots	☐	☐	☐

OK not OK n.a.

7 Operating value inspection

7.1 Respiratory gate control

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

PMA Learning time, window ☐☐☐

7.2 ECG control

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

PMA Function ☐☐☐

7.3 Dose control

QIQ Adjustment values ☐☐☐

7.4 Generator

PMA Checking/setting the tube filament heating ☐☐☐

8 Functional inspections

8.1 PC keyboard

PMF Key functions ☐☐☐

8.2 Triggering shock waves

PMF Triggering ☐☐☐

8.3 Footswitches

PMF Function ☐☐☐

8.4 Unit footswitches - urology

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

OK / not OK / n.a.

PMF Function ☐☐☐

8.5 Surveillance monitor

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

PMF Basic settings ☐☐☐

8.6 Tableside control panel

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

PMF Function ☐☐☐

8.7 Control PC mouse

PMF Function ☐☐☐

9 Quality inspections

9.1 Component inspection

9.1.1 Television chain

QSQ **Image quality** ☐☐☐

9.2 Final result quality inspection

9.2.1 Log book

QSQ Compare/document check results ☐☐☐

10 System adjustment

10.1 Collimator

PMA Radiation field ☐☐☐

PMA Fixed formats ☐☐☐

10.2 Cassette holder

PMA Cassette center ☐☐☐

OK | not OK | n.a.

Option present: Yes: ☐ No: ☐

Signature: _____

Date: Name:

10.3 Isocenter

		OK	not OK	n.a.
PMA	Adjustment	☐	☐	☐

11 Maintenance

11.1 Unit and system cabinets

		OK	not OK	n.a.
PMP	Cleaning the exterior	☐	☐	☐
PMP	Cleaning the interior	☐	☐	☐
PMP	Paint	☐	☐	☐

11.2 Log book

		OK	not OK	n.a.
PMP	Completeness	☐	☐	☐

12 Final Work Steps

12.1 Covers

		OK	not OK	n.a.
PMF	Installing unit covers	☐	☐	☐

12.2 Unit function

		OK	not OK	n.a.
PMF	Functions when the system is closed	☐	☐	☐
SI	Protective conductor test	☐	☐	☐